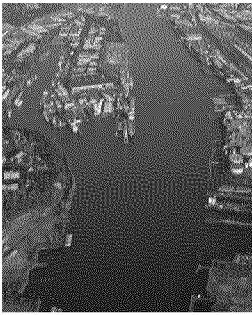


# Portland Harbor Superfund Site Getting ready for cleanup decisions

Information and Recommendations from The Lower Willamette Group



Summer 2015



For centuries the Lower Willamette River has been linked with the people who have lived on its banks. It has served millions of industrial, commercial, Tribal, municipal, and recreational users.

The river has gone through remarkable changes and challenges in the past 160 years. It has been exposed to the consequences of development of a major city, port and marine commerce, and

industrial operations along its banks, which have created environmental challenges as population and river uses grew.

In 2000, the U.S. Environmental Protection Agency (EPA) placed the Portland Harbor Superfund Site on the National Priorities List for cleanup. The Site is designated as a roughly ten-mile stretch of the Lower Willamette River.

Over the next year, EPA will finalize a Remedial Investigation/Feasibility Study (RI/FS) and prepare other documents to support its Proposed Plan for cleanup.

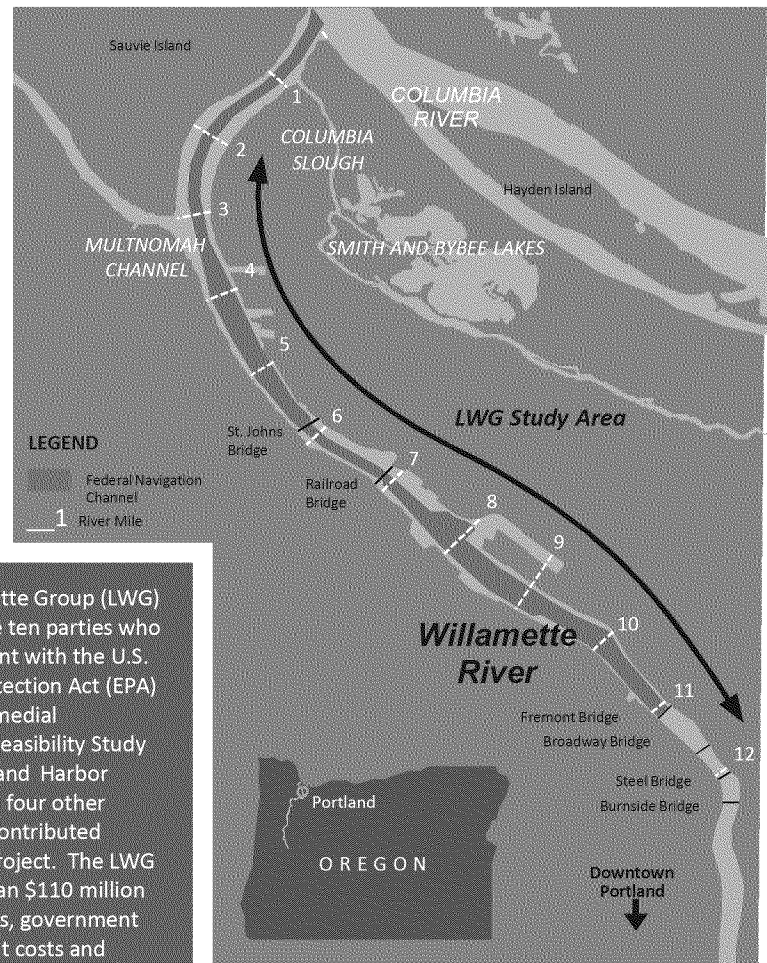
EPA is expected to prepare a draft remedy concept this fall. This remedy concept will be reviewed by the National Remedy Review Board (NRRB) in November 2015. The NRRB is a group of EPA staff from all over the country who provide peer review of proposed cleanup remedies before they are finalized.

The draft remedy concept will not necessarily be the basis for the final cleanup plan as there are still several steps to ensure the state, Tribes and community are able to comment on EPA's draft remedy concept after the NRRB review but before the Proposed Plan is issued. The Proposed Plan, which is expected to be issued in 2016, will inform the final cleanup record of decision (ROD) expected in 2017. The EPA will conduct a formal public comment period after the Proposed Plan is issued. The Lower Willamette Group (LWG) is committed to encouraging public dialogue and a better understanding of all key elements that will be in the final RI/FS, draft remedy concept, Proposed Plan and ROD for the Portland Harbor Superfund Site.

## Potential Risks at the Portland Harbor Site

Potentially unacceptable human health and ecological risks are mainly related to the historical releases of four chemical groups PCBs (polychlorinated biphenyls), dioxin/furans, the pesticide DDT and its related breakdown products, and PAHs (polycyclic aromatic hydrocarbons). Other chemicals that pose potential risks are present and will be considered in the cleanup decision.

Risk to human health including to recreational fishers, underwater divers, dockside workers, and others has been evaluated under several scenarios. The primary potential risk to human health is from regular and continuous consumption of resident fish, such as bass and carp that do not migrate out of the general Portland Harbor area. Human consumption of resident fish is evaluated because those fish can have elevated levels of PCB contamination in their



The Lower Willamette Group (LWG) is composed of the ten parties who signed an agreement with the U.S. Environmental Protection Agency (EPA) to conduct the Remedial Investigation and Feasibility Study (RI/FS) of the Portland Harbor Superfund Site and four other parties who have contributed financially to the project. The LWG has spent more than \$110 million on technical studies, government and Tribal oversight costs and

tissue. Consumption of migratory fish (e.g., salmon) does not pose unacceptable risks from sediment contamination. Direct human exposure to beach sediment, in-water sediment, ground water seeps, and surface water generally does not pose unacceptable risk.

The worst-case scenario used in EPA's risk assessment assumes a person eats 19 meals per month of resident fish on an ongoing basis for 30 years. In each of EPA's risk assessment scenarios, consumption of resident fish results in unacceptable risk even when Site sediments are at background (upriver) concentrations. Unacceptable risk is defined as potential excess cancer risk and non-cancer risk (e.g. impacts to reproduction) above levels established by EPA and specific to each Superfund Site.

Cleanup of sediments can approach background, but it is not technically feasible to go below background levels. Even if background levels could be achieved, unacceptable risks will remain under all of EPA's scenarios for resident fish consumption.

The LWG believes the cleanup levels which EPA establishes for Site sediments should correspond to varying risk levels across the Site, be based on relevant state and federal laws and guidelines, and be practically achievable given current site conditions. In accordance with federal Superfund law, EPA should also balance the feasibility, cost, and time of implementing cleanup options when setting the cleanup levels.

## Key Considerations for the Portland Harbor Sediment Cleanup

The LWG wants the resulting cleanup plan to be effective and implementable and therefore believes EPA should address the following key considerations as it prepares the draft FS and its draft remedy concept.

### Cleanup Goals

The goals for cleanup should be based on what is practically achievable over the long-term at the Site through sediment remedies and upland source control. Data for similar sites shows that upland source control can be a significant factor in improving sediment quality and the Oregon Department of Environmental Quality's source control program has made good progress in the Portland Harbor area.

Cleanup cannot be expected to go below background levels of chemicals in the sediment, which largely depend on what is coming into the Portland Harbor area from upstream and upland sources.

### Risk Assessments

The RI/FS includes human and ecological risk assessments. These assessments identified certain chemicals that pose the most risk to people who eat fish, and to the aquatic and wildlife. The cleanup plan should focus on cleanup remedies that do the best job of reducing risks to people, animals and fish.

### Conceptual Site Model

The conceptual site model in the RI/FS describes dynamic features of the Lower Willamette River (river flow, changing sediment depths, and sources of contaminants) and how people, animals and fish can be exposed to contaminants. The LWG collected thousands of sediment, surface water and groundwater samples in order to generate a site-specific conceptual site model for the Portland Harbor RI/FS. EPA should utilize this information to ensure the cleanup plan for Portland Harbor is realistic and achievable.

### Cleanup Remedies

There are generally four ways to address sediment contamination that poses unacceptable risk:

- Dredging and disposing of sediments.
- Treatment including innovative technologies where chemical or physical processes are used to remove sediment chemicals or make them less toxic.
- Capping sediments in place with clean sands or other clean materials to isolate them from the environment.

Monitored Natural Recovery, which is a process of monitoring the river's ability to clean itself through natural processes.

The FS will evaluate each of these technologies. EPA site managers have said the final cleanup will likely include a combination of all of these technologies

in one form or another depending on how they best reduce risks in different areas of the river.

### Risk Management

EPA has national sediment policies based on the federal Superfund law that help EPA site managers make site-specific risk management decisions. Risk management means comparing, ranking, and prioritizing risks and comparing and contrasting the costs, benefits, and time of cleanup options to reduce those risks. The Portland Harbor RI/FS, remedy concept and Proposed Plan should be clear on how risk management principles set forth in EPA's sediment guidance documents have been applied and incorporated.

### Use of Cleanup Technologies

EPA guidance states that remedial alternatives should be focused on achieving measurable and meaningful reductions of risk; i.e., protecting people, animals and fish from unacceptable exposures to contaminants. A combination of remedial technologies such as dredging, capping, monitored natural recovery (MNR) and/or in place treatment for achieving risk reduction over time should be considered.

### Natural Recovery

Evaluations of remedial alternatives will be reduced by the rate of natural processes where contaminants are cleaned from upstream and deposited over existing sediments.

Predictive models are an important part of identifying the right mix of remedial options for the Portland Harbor Superfund Site. LWG models identify that natural recovery is occurring. This modeling result is consistent with the comprehensive data collected from Portland Harbor gathered over more than 10 years - and can be further validated as additional data becomes available. Data collected in 2012 shows contaminants in fish tissue have decreased by more than 40 percent since 2002.

**Evaluation of Alternatives in the FS** In the FS, each alternative is evaluated against criteria included in the Superfund law. Alternatives must meet the threshold require of 1. Being protective of human health and the environment and 2. Meeting all applicable or relevant and appropriate regulations. For alternatives that meet these criteria, they are then evaluated for long-term effectiveness, short-term effectiveness, implementability, reduction of mobility, toxicity and volume, cost, community acceptance and state and Tribal acceptance. Each alternative will include several different technologies such as dredging, capping, in-situ treatment, enhanced natural recovery, monitored natural recovery and institutional controls. Dredging can result in short-term impacts if contaminants are released during cleanup. Capping in navigation or maintenance dredge areas is inappropriate since future dredging would encroach on the cap or recovery efforts. Enhanced natural recovery may not be effective in areas subject to propeller wash. Anchoring and spudding will not be allowed in capping areas so other technologies, such as dredging would be more appropriate, etc. Relying on enhanced natural recovery or natural recovery in this river system will require more time to reach cleanup levels, if ever, since it relies on natural processes that are uncertain and much less reliable than capping or dredging. **Cost-Effectiveness**

EPA will evaluate the cost-effectiveness for all alternatives are protective of human health and the environment and comply with all applicable or relevant and appropriate regulations. This review considers the relative benefits of each alternative compared to its cost.

### Site-Specific Flexibility

The Proposed Plan will need to provide enough information about what cleanup actions will be taken in the river in order for the public and all stakeholders to provide comments on the Proposed Plan. After considering all input on the Proposed Plan, EPA will issue a cleanup decision in a Record of Decision. During design, if there are changes to

### Remedy Selection Criteria

In order to determine feasibility, the federal Superfund law requires remedial alternatives to be evaluated for effectiveness, implementability and cost. The law specifies a total of nine criteria for remedy selection with the first two being the most important.

1. Overall Protection of Human Health and Environment
2. Compliance with Applicable or Relevant Appropriate Requirements of State and Federal Laws
3. Long-Term Effectiveness
4. Reduction of Toxicity, Mobility, and Volume through Treatment
5. Short-Term Effectiveness
6. Implementability

7. Cost-Effectiveness  
8. State Acceptance  
9. Community Acceptance

the remedy based on new information, EPA will issue an Explanation of Significant Differences or a ROD Amendment to document the changes.